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THE

TYPES OF DELIRIUM TREMENS,

THEIR

PATHOLOGY AND TREATMENT.

BY

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In the following paper, I propose to consider the types of Delirium Tremens, or rather the pure form of this disease in relation to sequent and kindred affections of the brain, caused by the intemperate use of alcoholic drinks, aided by other predisposing causes.[1] The types of the disease are at present variously arranged, in nosological systems, as *Delirium Tremens nervosum et traumaticum, phrenesia potatorum, encephalitis tremefaciens, delirium afebrile tremens, and irritative fever of drunkenness.* I am not aware that there exists any description of Delirium Tremens, embracing its modifications and complications, which can be considered practically applicable as a guide to the treatment of the disease in all its varieties. I shall, therefore, describe the disease in its simple form and in its complications, characterizing each by a distinct definition; so that the relations and differences of the modifications may be at once seen, and made the foundation of a like modified treatment. The facts and illustrations of this paper are taken from numerous cases, received into the European General Hospital at Bombay, from the beginning of 1836 to the end of 1840, and which were treated either by the hospital assistants or myself.

The most usual divisions of this disease have been into two species; the one succeeding the excitement of hard drinking, without any intermediate abstinence from the accustomed stimulus; the other, attacking habitual drunkards soon after the accustomed stimulus had been withdrawn. The former may be considered as a state of *hyperæsthesia*, and increased vascular action in the nervous centres, or in the remote organs

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[1] Many of the erroneous principles acted on, at various times, in practical medicine, have been drawn from narrow-minded views of the specialities of diseases, considered as *entities*, and without reference to the analogies of their phenomena. Nosology, to be of real practical utility in medicine, must have its foundation in the relations which exist between modified states of disease, each leading to important points of practice. The influence which one class of morbid functional derangements has in modifying the conditions of subordinate functions in other classes, should be made an important consideration in our study of diseases affecting different tissues, but associated in their phenomena and progress, as originating in derangements common to all their modifications.

acting on them; the other, a state of *hypæsthesia*, or exhausted nervous sensibility and diminished vascular action of the capillaries, more nearly akin to congestion than inflammation. Dr. Stokes, of Dublin, thinks that the pathological condition of the former consists of gastritis, accompanied by excitement of the brain and nervous system; and recommends that its treatment should be that of gastritis: but that in the other case, the functions of the brain are disturbed, by the abstraction of an accustomed stimulus, and that the appropriate treatment must be to restore that stimulus, and administer porter, wine, brandy, and opium. The division of the disease into stages, as adopted in Dr. Blake's well known and excellent monograph, is chiefly applicable to the pyrexial variety, wherein constitutional predisposition has been established by typhoid influences, or whatever impairs the vitality of the system, such as inanition, immoderate mental exertion, intemperate habits, impoverished food, and malarious emanations; but these stages are altogether absent, or, in general, imperfectly developed in the other forms. The sedative influence of *malaria* and of *alcoholic stimulants* on the nervous system, has a natural tendency to produce a stage of depression or temporary collapse, followed by one of erethism, and terminated by one of nervous and capillary relaxation, such as characterize the *pyrexiæ*; and though, like fever, Delirium Tremens is frequently a compound affection of the nervous, circulating, and secretory systems, it is frequently met with without being associated with any derangement of the latter, and without the characteristic stages of febrile disease. The only divisions of it, therefore, should be such as are founded on leading differences of characteristic phenomena, and which may guide us to some practical modifications of treatment. These differences seem to point out the modifications of Delirium Tremens under four forms—the *simple*, *inflammatory*, *pyrexial*, and *epileptic*; which, with the predisposing and exciting causes of the disease, the character of the nervous erethism and mental alienation accompanying the several forms, their pathology and treatment, I now propose to consider.

There is no one symptom which may be considered as an essential character of the disease; its leading features are insomnia, excited agitated manner, constant loquacity and reverie, with tremor of the hands, and sometimes a fidgetty employment of them. The patient, who has lost the power of attention and association of ideas, when awakened to a sense of consciousness by a question addressed to him, answers generally to the purpose, and does whatever is required of him; but, being unable for any length of time to fix his attention, or control his volition, he immediately after wanders from the scene around him, and relapses into incoherency.

It is difficult to give any true or concise description of Delirium Tremens. It may, however, be thus defined.

Def. *A disease which manifests itself, after hard drinking, or the long-continued and free use of narcotico-stimulant substances; and is characterized by insomnia, exalted sensorial function, rapidity of thought, mental hallucination or illusions of sense, tremor of the tongue or limbs; delirium occasionally associated with inflammation or fever, a cold clammy perspirable state of the cutaneous surface, seldom recovered from without a critical sleep, and prone, in its worst forms, to terminate in coma.*

MODIFIED FORMS.

I. *Simple.* This must be considered as the purely nervous variety, depending on mere erethism of the system, either of centric or peripheral origin, which runs a certain course, and has a tendency to subside of itself in a given time.

DEF. *It is marked by insomnia; busy mental excitement and loquacity; psychical hallucination or incoherent muttering; illusions of sense; timid suspicion of imagined conspirators; tremor of the tongue or hands; hepatic erethism or irritability of stomach; impaired urinary function; occasional headache and precordial anxiety; tongue sometimes clean, at others loaded; pulse frequent, irritable, sometimes natural; a perspirable state of the skin, and pain of the limbs: the disease varying by the occasional absence of mental incoherence or tremor.*

The first tabular statement of forms will best illustrate this variety of the complaint; which, as has been shown by Dr. Ware of Boston, has a natural tendency to terminate in a spontaneous and salutary sleep, at a period seldom less than sixty or more than seventy-two hours from the commencement of the paroxysm, which may extend, however, to six entire days. The generality of cases composing the first table, seldom ran a course beyond the beginning of the fourth day; though, in some of them, the nervous erethism and increased vascular action of the cerebrum extended beyond this period. In one, the symptoms did not subside until the ninth day; but in this instance, perhaps, the exalted nervous sensibility was accompanied by functional exhaustion of the nerves of the cerebral blood-vessels, followed by relaxation of the capillaries akin to inflammation. This is a point of practical importance, in observing the phenomena of the various forms of Delirium Tremens, which may vary from slight tremor with spectral illusions, depraved sense of hearing, or deranged common sensation, to aggravated forms of inflammation, muscular agitation, fever, and vital depression: all of which must be viewed by the discriminating practical physician, as transitions only from lesser to greater degrees of disease. In most cases of indisposition among drunkards, an attack of Delirium Tremens may be looked for as a probable event; and cerebral erethism, which constitutes the lesser degree of this complaint, may supervene on peripheral irritation of the skin, stomach, intestines, or thoracic contents. Dr. Stokes, in illustrating sympathetic affections of this kind, cites a case from Andral, where the symptoms of gastritis were suspended on the supervention of tetanus, which proved fatal; and on dissection, the brain and spinal cord presented no morbid appearances, though the mucous surface of the stomach was intensely inflamed. In another case, which occurred at the Meath Hospital, the patient laboured under symptoms of cerebral inflammation, though there was no epigastric tenderness, vomiting, or symptom of gastritis; yet, on dissection, extensive inflammation of the digestive tube was discovered, but none of the brain or its membranes. Where symptoms of erethism do not subside so quickly as usual in the simple forms, we must not too hastily ascribe them to the existence of inflammation. I have seen attacks of Delirium Tremens brought on in drunkards by the application of blisters. It is well known that wounds and other injuries bring on the *traumatic* form of the complaint, to which Dupuytren first called attention; but this celebrated surgeon too hastily

inferred it to be in all cases a species of *encephalitis*. The disease frequently occurs in those subject to hepatic erethism, or copious biliary secretion, accompanied by irritability of stomach, and frequent vomiting; but, in such patients, its phenomena quickly disappear under the depurating effect which such increased secretion produces in the constitution. Similar critical evacuations, from the kidneys, skin, and intestines, during the convalescence and recovery from mania, were observed by Pinel, who says, that such patients were less liable than others to relapse. The tabular statement appended, shows that the disturbed state of sensation and intellectual action was sometimes considerable, in cases where there were no tremors; and again, tremors existed in some, where there was no sensory disturbance.

II. Inflammatory. This is the next form of the disease with which we meet in the tropics. It is one marked by a greater degree of vascular determination to the brain and its connexions, or to some of the remote organs, either the stomach or lungs, which may act sympathetically on the nervous centres.

Def. *Characterised by great restlessness and impatience of manner; maniacal violence, and busy psychical hallucination or muttering delirium; flushing of the countenance, heat of head, and contracted pupils; convulsive twitching of the muscles, heat or pain at the epigastrium; a frequent full, or hard pulse; generally, a dry, hot skin, but sometimes, a cool, perspirable, cutaneous surface; a dry, red, parched tongue; and much thirst.*

The transition from simple erethism, or disturbed sensation, accompanied by a slight degree of derangement in the capillary circulation of the brain, or peripheral organs, to a higher degree of nervous irritation and increased vascular action, constituting an inflammatory state of either the nervous centres or their peripheries, must be viewed as an important ground of distinction in the various phases of the same disease. That this distinction is one well marked, the various cases of Delirium Tremens, which compose the second tabular statement, will show; and it should not be lost sight of, either in the pathology or treatment of the complaint. It is important in all inflammatory affections of the brain, and of its subordinate nervous centres, to determine whether nervous or vascular derangement has the precedence; for on the predominance of one or the other, the treatment must be regulated. The primary assimilation of individuals attacked by Delirium Tremens, will be generally found defective previous to the occurrence of the attack; and as the processes of nutrition, both in the nervous and vascular systems, has been imperfectly performed, it is necessary to keep in mind, that inanition, and other predisposing causes of the disease, are debilitating ones, which give to the inflammation set up, a character of exhausted constitutional power, strongly disposed to pass into suspended functional action of the nervous centres, by terminating in coma, apoplexy, and cerebral effusion. If the attack has been preceded by long-continued habits of intoxication or great mental excitement, this state of innervation and exhausted power will be more apparent in particular symptoms, as the low, muttering character of the delirium; the anxiety of the respiration; the frequency, feebleness, and irritability of the pulse; the pallor of the countenance; the cold and clammy moisture

of the cutaneous surface, and the dryness of the tongue. Every increased action and excitement of the nervous centres involves, as would appear, a disintegration of their substance, and corresponding demand of reparation, without which, immediate suspension of their functional operations must follow. Attention to this law of the constitution will be found of great importance as ground for modified treatment of this disease.

III. *Pyrexial.* The third form of the complaint, which occurs more generally in the malarious seasons of the year, from July to October, is frequently met with, during the other months, in constitutions rendered irritable by long residence in warm climates, or in persons previously subject to intermittent and remittent fevers.

DEF. *It is accompanied by wakefulness, anxiety, and restlessness; following a stage of depression, chilliness, or shivering; succeeded by febrile heat of skin, or cold clammy perspiration; tremor, muttering delirium, and illusions of sense; frequent sighing; rapid, irritable pulse; furred tongue; scanty urinary secretion; complicated with inflammation and pyrexial paroxysms, and prone to terminate in collapse or epilepsy.*

Most of such cases might be viewed as forms of irregular remittent fever, which, accompanied by irritability of the sensorium and nerves, are apt to terminate in suspension of the nervous functions. Among recently arrived Europeans, during the hot weather in India, this form is met with as the product of elevated temperature and excessive spirit-drinking, and assumes many of the characters of an inflammatory remittent, in which accelerated vascular action has predominence over nervous erethism. In the *asthenic* modification of it, however, the vertigo, dilated pupil, oppressed and weak pulse, and other symptoms of depressed nervous energy, (which characterize cases of Delirium Tremens), with a well marked tendency to syncope and feeble action of the heart, point it out as a disease of innervation. Modifications of this variety, in debilitated constitutions, rendered irritable by long residence within the tropics, are also frequently met with during the cold months. In a practical point of view, it is useful to arrange such cases as modifications of Delirium Tremens; for though, with equal propriety, they might be classified as varieties of remittent fever, they should be separated in the mind of the physician, from more pure remittent fevers, caused chiefly by malarious influence.

IV. *Epileptic.* This is the fourth and last form of the disease.

DEF. *Insomnia; psychical hallucination, or illusions of sense; extreme tremor; and sometimes convulsive twitching of the muscles, passing into sudden loss of consciousness and sensation, accompanied by clonic spasms of the muscles, recurring in paroxysms, which terminate in recovery of consciousness and sensation, or in apoplectic annihilation of the cerebral functions.*

In the fourth tabular statement, seven of these cases are given, five of which proved fatal. The symptoms were analogous generally to the delirium, coma, and epileptic convulsions, induced by certain narcotic poisons, as belladonna and stramonium. Regarding the poisonous effects and symptoms of these last, I shall have, presently, occasion to speak.

The retention of these poisons in the system gives rise to a disturbed state of intellectual action and sensation, similar to what takes place in common epileptic attacks; and epileptiform symptoms of Delirium Tremens, are, as would appear, the combined result of the poisonous action of the alcoholic stimulant on the system, and the retention of important excretions, particularly the biliary and renal, which, when not eliminated by their own proper organs, cause the body to become a source of poison to itself.

PREDISPOSING AND EXCITING CAUSES.

Attacks of Delirium Tremens seem to depend, in many cases, on peculiarity of temperament, and individual constitutional excitability, either of hereditary or acquired origin. They happen most frequently among men of irritable dispositions, who are subject to precordial anxiety; or may be brought on by habitual indulgence in strong alcoholic drinks, and certain other narcotics, or stimulants. Whatever debilitating causes exhaust the energy of the nervous and circulating systems, and reduce the normal condition of the nutritive functions of the body, such as insufficient alimentation, inordinate mental exertion, and the immoderate use of various narcotic irritants, aided by the elevated temperature of tropical climates, are well marked predisposing causes of the disease. They render more effectual the influence which alcoholic drinks have in disturbing the intellectual, sensory, and motor functions of the brain and medulla oblongata. In such cases, immoderate spirit-drinking becomes an exciting cause of the disease; but in other cases, immoderate and continued habits of debauch become the predisposing causes of the phenomena which accompany the attack, but which are not developed in the system until some additional cause of exhaustion produces them. In this manner, losses of blood will often produce, in men of intemperate habits, all the phenomena of Delirium Tremens; and these are seen to follow, in many cases, hæmatemesis, or the bleeding from a wound.[1] Other predisposing causes, such as imperfect ventilation, malarious emanations, and the exhausting effects of fear and disease, seem to operate as predisposing causes; which, by enfeebling the vigour of the circulation, and impairing the energy of the nervous system, give efficacy to intemperance as an exciting cause of the disease. Sometimes, elevated temperature, or habitual exposure to the sun, act in this manner as predisposing causes, and give efficacy to immoderate drinking as the exciting one; but all these causes may be seen to occasionally change places with each other, while all of them agree in exerting the same morbific influence, by producing defective innervation, and consequently, unequal distribution of blood in the central or peripheral sensory organs.

Regarding the influence which elevated temperature has in producing the disease, Dr. Morehead, in some sensible observations appended to his *Pathological Anatomy of the Diseases of Bombay*, observes, that of

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[1] Discontinuance of the immoderate and habitual use of ardent spirits, by producing a like state of exhaustion, becomes an immediate cause of the disease; the stimulus of alcohol being here the predisposing, and the cessation of its action the immediate cause of an attack.

twenty-nine cases where increased serous effusion and abnormal cerebral vascularity existed, within the cavity of the cranium, only three of these happened in the cooler months of the year, from November to March; and that the remaining twenty-six cases were distributed over the hot months, from the beginning of April to the end of October. In the tabular statement, given by him, of the percentage of admissions for Delirium Tremens, on the total of diseases in hospital for five years, the comparative frequency of the former, in the different months, is thus shown.

Jan.	Feb.	Mar.	Apr.	May.	June.	July.	Aug.	Sept.	Oct.	Nov.	Dec.
3·2	5·3	2·1	4·4	4·7	3·1	2·3	1·9	3·3	1·2	2·3	3·5

Now the greater fatality of the disease, from April to October, may, in part, arise from the decrease of electricity in the air, during these months; Professor Faraday having lately expounded the decrease, obtained in degrees of M. Pelletier's electrometer. From these numerical results, Dr. Faraday finds that, in European climates at least, the quantity of electricity is at its maximum in the winter months, until it finds its minimum in June, and then again rises to its maximum in the succeeding January. The greater prevalence of Delirium Tremens in the cold months, as indicated by Dr. Morehead's table, would seem, however, to militate against the truth of any such inference; but the preponderance of the disease in hospital, at this time, may probably be explained by the fact, that the greater number of cases of Delirium Tremens admitted, are from among the seamen in the harbour, and that, in these particular months, there are more than the usual proportion of ships at Bombay. Dr. Blake, in his essay on the disease, decides somewhat hastily, that neither season nor climate has any material influence on its prevalence, while he quotes Rayer's opinion, that twice as many attacks of the complaint occurred in the month of May, as in any other month. Dr. Bang, on the other hand, found, that June and July were as fertile in its production as the month of May. Additional facts are yet wanting for the satisfactory solution of this interesting question, as to the influence which negatively electric states of the air have in rendering attacks of the disease more frequent or fatal in particular months; and an extension of Pelletier's investigation of this matter might be advantageously carried out in India.

Predisposing causes of the worst types of the complaint, the pyrexial and epileptic, will be found in some forms of organic disease of the brain or its membranes, of the heart or lungs, of the liver, and more particularly of the kidneys. Examples of these several causes are given in the two last tabular statements; which show, that organic renal disease is a much more frequent source of the worst symptoms of Delirium Tremens than is generally suspected; and lead to the inference, that when the elements of the bile and urine are not separated by their excreting organs in normal quantity, or when the brain, by the continued narcotism of alcoholic drinks, softens or is atrophied, the imperfect action of the liver and kidneys, being unable to free the blood from the excrementitious poisons accumulated in it, and not compensated by a suitable increase of the other excretory functions of the skin and lungs, tends to coma, asphyxia, and death.

DIFFERENTIAL DIAGNOSIS OF THE SYMPTOMS OF DELIRIUM TREMENS, AND THOSE OF POISONING BY STRAMONIUM, AND OTHER NARCOTICS.

Supervening as Delirium Tremens frequently does on the puerperal state, or on febrile attacks in the intemperate, and productive as are other stimuli and narcotics of complaints attended by nervous depression, restlessness, obscurity and perversion of the senses, delirium, and deranged states of the circulation, it is important to mark attentively their peculiar symptoms; so that the physician may be enabled to distinguish between them and those of the complaint now under consideration. The limits of this paper, will not permit me to do more than briefly notice the character of the mental alienation, as compared with other kinds of mania. I must, therefore, chiefly confine this Differential Diagnosis to the symptoms of Delirium Tremens, which are liable to be confounded with those disorders caused by stramonium, and other narcotics.

Before proceeding to the latter, I may here notice the characteristic mental alienation of Delirium Tremens, confounded with other maniacal states, and not always altogether inseparable from them, particularly in the monomaniacal cases of irresistible propensity to habits of intoxication; which, under the influence of extreme tropical heat, and maniacal idiosyncrasy, are occasionally met with. In cases of this nature the patient is violent, maniacal, and unmanageable; ready to injure himself, and dangerous to others when unrestrained. Some of the inflammatory forms of the disease are of this kind; but in such predisposed maniacal constitutions, we must not hastily conclude that the delirium is attendant on encephalitis, as it may proceed from temporary erethism of the brain, caused by alcoholic stimulants. In the table of the simple form, the case of J. A., admitted 19th June, 1838, is a good illustration in point. The patient, though very violent and maniacal during the paroxysms, inflicting on himself several wounds, became quiet and rational on the second day, without the use of any decisive antiphlogistic measures. The symptoms which serve best to distinguish the simple erethismal type from the cerebral *inflammatory* one, may be found in the state of the *skin;* which is soft and covered with perspiration in Delirium Tremens, generally hot and dry in encephalitis; in the *pulse*, which is soft and compressible in the former, sharp, strong, and resisting in the latter; in the *pallor of the countenance* and frequent absence of headache in one, contrasted with the flushed face, contracted pupil, intolerance of light, and throbbing of the temples common to the other; in the *tongue*, which is moist, loaded, and not greatly altered from a natural state, in exalted sensibility of the brain, but is dry and furred in inflammation of this organ; in the *tremors*, which, though so common to one, as to give it a distinguishing name, are replaced in the other by convulsive twitching of the muscles; and above all in the *character of the delirium*, which consists in obscure perceptions and weakened volition, illusions, erroneous convictions, and a busy bustling train of false ideas, opposed to unmanageable maniacal violence, which cannot be recalled from its reverie to a temporary sense of consciousness, accompanied by persistent incoherent loquacity. The simple form of the complaint again presents many of the characters of *acute dementia*, from which it differs but little, I believe, in pathological condition. Each renewed

attack of the former malady seems to bring the symptoms nearer and nearer to those of the latter. In both diseases there is the same lost power of perception and attention, the brain being no longer susceptible of receiving and obtaining impressions transmitted to it, and consequently incapable of associating the relations or preserving the recollection of objects presented to it. The history of the manifestation of the symptoms, and an inquiry into the predisposing and exciting causes, will always enable us to form a probably correct diagnosis of the two diseases in cases of difficulty and doubt.

But it is now time to turn attention to the chief object of this section,—the difference between the symptoms of alcoholic poisoning and of that from other narcotic substances. The phenomena attending the cumulative morbid influence of alcoholic drinks, are in many instances similar to those of other narcotic poisons, which act more immediately and directly on the grey or vesicular and white or tubular matter of the brain. Alcoholic fluids absorbed into the blood may therefore be considered indirect poisons; the primary effect of which, in large doses, seems to be irritant and stimulant, followed by a secondary sedative action on the brain, which constitutes them narcotic poisons. The symptoms of their poisonous effect most closely resemble those which proceed from poisoning by various species of *datura*, indigenous to India: of which Dr. Herbert Giraud, professor of chemistry in the Grant Medical College at Bombay, has given the best and most intelligent description.

Dr. Giraud informs us that in 1848, fifty-one cases in which stramonium poisoning had been inferred on presumptive evidence of its characteristic symptoms, were treated in the Jamsetjee Jeejeebhoy Hospital at Bombay. The seeds of the species of datura supposed to have been used, were those of the "datura alba" and "datura fastuosa", both indigenous to India. The general character of the symptoms closely resembled those induced by datura stramonium, exhibiting, in several instances, the three distinct stages, 1. of primary delirium, 2. of sopor or coma, and 3. of secondary delirium, which have been observed to mark the action of henbane, belladonna, and other solanaceous plants. The patients were seldom brought to hospital before the second stage had commenced, and very frequently not until the third stage—that of secondary delirium—had supervened. In the majority of cases, either from the small quantity of the poison, from the large amount of food ingested with it, or from peculiarity of constitution, only a single stage of delirium was observed.

The following is Dr. Giraud's description of the general course of the cases in which the full effects of the poison were manifested:—"The patient, in the primary stage of delirium, is found in a state of extreme restlessness, usually attempting to wander about as if in search of something, but frequently, from giddiness and extreme muscular weakness, he is unable to walk or even to stand; he either vociferates loudly, or is garrulous and talks incoherently; sometimes he is mirthful, and laughs wildly, or is sad and moans, as if in great distress; most generally he is observed to be very timid, and, when most troublesome and unruly, can always be cowed by an angry word, frequently putting up his hands in a supplicating posture. When approached, he suddenly shrinks back, as if apprehensive of being struck, and frequently he

moves about as if to avoid spectra. But the most invariable accompaniment of this, and of the final stage of delirium, and frequently also of that of sopor, is the incessant picking at real and imaginary objects. At one time the patient seizes hold of parts of his clothes or bedding, pulls at his fingers and toes, takes up dirt or stones from the ground, or as often catches at imaginary objects in the air, on his body, or on anything near him; very frequently he appears as if amusing himself by drawing out imaginary threads from the ends of his fingers; and occasionally his antics are so varied and ridiculous, that I have seen his near relatives, although apprehensive of danger, unable to restrain their laughter. Many of these singular movements appear to originate in a curiously-impaired or disordered state of vision, in which distant objects seem to the patient as if very close to him, and those that are near as if highly magnified; for frequently, after gazing for some time at a distant object, he will attempt to grasp it, as if it were close at hand; and he starts back when approached, as if he thought the person approaching would, the next moment, touch him. This state of vision may, in part, depend upon the widely-dilated pupil, which, as in poisoning by other solanaceous plants, is an invariable symptom in all cases, and is persistent through each stage, and even continues for some time after complete recovery. With the foregoing symptoms, great diversity in the state of the circulation is met with in different individuals, and even in the same individual at different periods. In the greater number of cases, the temperature of the surface, and the strength of the pulse are natural: although the rate of the latter is usually somewhat accelerated, (90 or 100). In other instances, the pulse is much quicker than natural (112 or 120), full, firm, and even sharp; the temples throb, the respiration is hurried, and the surface of the body is hot: whilst, as a third and less frequent condition, the pulse is quick, small, and feeble; the respiration slow, and the surface cold.

"The second stage, that of sopor, is the state in which a great number of cases are first brought under notice. They are then found either in a state of profound sopor, or in one of excessive drowsiness, from which they may be partially and momentarily aroused to some degree of consciousness; there is low muttering delirium, tremors, subsultus tendinum, and, most usually, the characteristic catching at objects, although the patient's eyes may be closed at the time."

The diagnosis of the simple erethismal type of Delirium Tremens, from like cases of narcotic poisoning, will be found in the history and development of the two diseases from their respective exciting causes; in the persistent *insomnia* of the one, contrasted with the somnolency, or rather *somnambulism* of the other; in the *manner* of the patient, which is busy and active in the former, sluggish and inactive in the latter; in the *greater power of controlling the thoughts* for a moment, which those labouring under drunken cerebral erethism possess over those affected by the narcotism of stramonium; and in the *more busy character of the delirium* of the first, compared with the drowsy, low muttering, and catching at objects of the last. In the form of Delirium Tremens, caused directly by the abuse of intoxicating liquors, the more *sthenic* character of the nervous sensibility, and of the vascular excitement, is at once so strongly marked, as to prevent any possibility of mistaking the two affections.

POST-MORTEM APPEARANCES AND PATHOLOGY.

The *Morbid Appearances* of the brain and peripheral organs of the chest and abdomen, as they occurred in the fatal cases of the tabular statements here given, will be found briefly narrated in the column of results. Dr. Morehead, also, in his *Pathological Anatomy of the Diseases of Bombay*, published in the *Transactions of the Medical and Physical Society* of that Presidency, has recorded the necroscopic appearances of the body in several cases.[1] The chief *cerebral* lesion, in those not addicted to long-continued intoxication, consisted of moderate turgescence of the membranes, opalescent thickening of the arachnoid, an abnormal vascularity of the substance of the brain, and copious serous effusion into the sub-arachnoid areolar tissue, with occasional bullæ of air in this tissue, or in the vessels of the cerebral membranes. Dr. Todd, in his valuable *Treatise on the Anatomy of the Brain and Spinal Cord*, observes, that Cotunnius and Magendie deduce, from their experiments on this *cerebro-spinal* fluid, that two ounces of it may be regarded, in a state of health, as a minimum quantity; and that twelve ounces of it may sometimes be obtained from the *cranio-spinal* cavity, according as there is a greater degree of atrophy of the brain. In the necroscopic examination of fatal Delirium Tremens cases, as they occurred in India, I am not aware that any accurate estimate of the total quantity of this effused fluid has ever been made. The quantity generally effused in the cranial cavity, was, however, abnormally great, amounting often to four ounces. The effusion occupied the sub-arachnoid tissue in the depressions of the cerebral convolutions, so as to give them a smooth, uniform appearance. The cerebral convolutions, too, were abnormally shrunk and flattened, not by distension from within, but as if they were abnormally shrivelled from atrophy of the cerebral matter; a result, probably, of the increased vascular action which had been repeatedly set up in the brain by excess of spirit-drinking. Mr. Stovell, the present surgeon of the European General Hospital, at Bombay, records the case of John Powell, an apothecary, thirty-nine years of age, of very dissipated habits, who died of Delirium Tremens; and in whom, on necroscopic examination, the brain was found unusually small, weighing 2lbs. 10oz.[2] Future observations on this point, made in India, should be specially directed to ascertaining the usual average weight of the brains of those who die of this disease; some of the worst symptoms of which are certainly associated with atrophy of the cerebral matter. The serum has been found occasionally sanguineous; and generally, the arachnoid, which was thickened, was of an opaque, milky appearance. In the inflammatory, pyrexial, and epileptic forms, the appearances were frequently of a better marked inflammatory character; viz., vascularity and thickening of the dura mater and pia mater, bloody effusion on the former, adhesion of the arachnoid to the pia mater by a thick layer of lymph, and abundant serous effusion within the cerebral membranes, or into the substance of the brain. The appearances in the mucous mem-

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[1] Transactions of the Medical and Physical Society of Bombay, No. ix, p. 120.

[2] The average weight of the encephalon, estimated from Professor J. Reid's careful observations, made at the Royal Infirmary, Edinburgh, is 3lb. 2oz. 3½dr. in the male; and 2lb. 12oz. 8½dr. in the female.

brane of the *stomach* and *small intestines*, were generally of a chronic inflammatory character. The *liver* was sometimes enormously enlarged, and compressed the right lung. The *kidneys* were often converted into a uniform fleshy mass, or in a state of fatty degeneration of the cortical substance, encroaching much on the tubular portion. The *lungs*, in a few cases, were emphysematous, and gorged with blood, as in asphyxia. The *bubbles of air* in the vessels of the pia mater, or in the sub-arachnoid tissue, as observed by Dr. Morehead, were found in two of the cases, five hours after death, and appeared to be evolved from the animal fluids during life. Future observation should be directed to ascertain the chemical nature of the gas evolved, as it may result from the usual metamorphosis of the inspired oxygen and expired gases, in the peripheral system of the kidneys and liver, being arrested by this disease.

Pathology. An immoderate use of alcoholic drinks causes primarily excitement of both the nervous and circulating systems, followed, generally, by secondary depression of the functions of the brain; but when this nervous depression does not supervene, and the increased action of the circulating vessels continues, this may gradually subside without consecutive depression, as in some of the simple forms of Delirium Tremens; or it may terminate in cerebral inflammation and fever, such as characterize the inflammatory and pyrexial varieties of the disease. The derangement of the capillary circulation of the brain or its dependent nervous centres, and of the peripheral organs, is accompanied by exaltation of the sensorial function; so that these nervous centres and peripheries react on each other in producing various degrees of erethism and increased vascular action, observable in various states of the disease. Whether the nervous erethism be of centric or peripheral origin, it is accompanied by a mild or violent delirium, according as the deranged vascular action is of an *asthenic* or *sthenic* kind; and may be accompanied by excitement of the senso-motory function and muscular irritability; terminating in nervous exhaustion and depressed action of the heart, with coma and apoplectic death, or suspended function of the pulmonary capillaries, or asphyxia. The sthenic or asthenic symptoms, which become the objects of treatment, predominate according as the general nutrition of the system has been well or ill performed; or as the nervous centres are in a state of healthy energy or defective innervation, and according to their degrees of normal capacity and nutrition. In the young and robust, whose blood is rich in fibrin, and whose nerves are well nourished and exalted in tone, increased vascular action generally takes precedence of the nervous erethism; but in the old, and in those worn down by the effects of climate and their own intemperate habits, exhausted nervous power, and asthenic vascular action, will be leading features in the complaint.

The indirect narcotic action of alcoholic drinks is exerted on the central organs of the nervous system, the brain and spinal marrow, and is analogous in effect to that of more direct narcotics. This is shown by the loss of sensibility and volition, the convulsions, coma, and death, which follow previous excitement. The suspension of the respiratory movements, or the asphyxia, seems to be sometimes primary, sometimes secondary; but both the coma and asphyxia, in the worst cases of Delirium Tremens, are generally contingent on anterior conditions of the

system, and the suspension of its usual eliminating processes. The exhausted nervous power, and asthenic vascular action, which characterize particular attacks of the complaint, are found essentially connected with such conditions, which must not be neglected in the treatment; and are of more importance as the foundation of therapeutic indications, than the one too exclusively and absolutely acted on in many cases, that of interfering with the regular course of the erethismal paroxysm, by administering large doses of opium, chloroform, and other sedatives, instead of depurating the poisoned blood, and removing diseased secretions by means of purgatives and diuretics. Under the head of epileptic forms of the disease, seven such cases are recorded; of which, five proved fatal. A necroscopic examination of four of these revealed, that one of them was fatal by *coma*, two by *asphyxia*, and one by *syncope*. The comatose case was associated with cerebral disease and organic heart-affection of long standing; the latter organ being affected with fatty degeneration of the right side, and softening of the left. The two asphyxiated cases were connected with organic disease of the kidney or liver; and the case of death by syncope presented enlargement and softening of the heart, with ossification of the semilunar valves of the aorta.

TREATMENT.

I have thus endeavoured to bring into review all the varied aspects which Delirium Tremens presents under different anterior conditions of the system, arising out of diseased changes of the organism, or from the nature of the predisposing causes to which this may have been exposed. It will be obvious, from the exposition given, that the indications of judicious treatment must be founded on a correct diagnosis of particular cases, and on a sound knowledge of the existing pathological conditions associated with the morbid phenomena. Such can be alone obtained from a strict pathological analysis of the symptoms, combined with a knowledge of the previous habits of the patient. It should not be too hastily inferred, that the sole and leading indication of the treatment must be to induce sleep by heroic doses of opium; for this, when given too largely in order to cut short the exalted sensibility of the brain, without reference to the conditions of other remote organs, particularly the liver and kidneys, is fraught with much danger to the patient, by causing convulsions, coma, and death. Dr. Ware's two admirable memoirs on the *Natural History and Treatment of Delirium Tremens*, are most important contributions to a philosophical knowledge of the disease; and the conclusions arrived at, are essential elements in our comprehension of its true pathology and treatment. These conclusions are fully supported by the progress and termination of the forty-one cases reported in the first tabular statement. The paroxysm of the disease commences with certain obscure signs of depression, followed by excitement and delirium, which run a certain course, and terminate in sleep. This may be considered as much sequent of the stage of excitement, as is the secondary delirium to the stage of coma in cases of poisoning by stramonium. As a favourable termination of the symptoms generally follows a sound sleep, it has been concluded, somewhat erroneously, that sleep, induced by whatever means, is the cause of the salutary change which takes place, and by which the patient is relieved from excitement and restored

to reason. A profuse warm sweat may be observed to accompany this critical sleep; but when no such crisis is observable, and sleep has been procured at all hazards by means of large doses of opium, the patient passes into a state of apoplectic coma, from which he may never awake. The excitement of the system does not altogether depend on the loss of sleep; and we must not proceed too vigorously in endeavouring artificially to induce it by means of opium or chloroform, till the impaired secretory and excretory functions of the body have been restored to healthy exertion.

The indications of treatment to be generally acted on are: 1. To allay the exalted sensibility of the central nervous organs or their peripheries, by reducing vascular derangement and inflammation, by means of mild antiphlogistic remedies, and by the removal of all irritating diseased secretions of organs that react on the brain. 2. To restore the organs of assimilation to a healthy condition, so as to supply fresh nutrient materials to the blood; and to prevent nervous exhaustion by a moderate allowance of stimuli, combined with such materials. 3. To eliminate poisoned products from the blood, by restoring the proper excretory functions of the liver and kidneys.

In fulfilling the first indication, it will be prudent to seclude the patient in a quiet and partially darkened apartment, and let him be watched by some well instructed nurse or attendant, who is capable of quieting his impatience, and can manage him without physical restraint. I have known many cases, in which the mental emotion and nervous exhaustion, caused by coercion, were followed by the utmost danger to the patient, by bringing on an epileptic seizure. In particular instances, where the vascular action preponderates over the nervous erethism, the cautious use of general or local bleeding is admissible; but it must be remembered, that, though in such instances of inflammatory or pyrexial complication, blood-letting may be had recourse to, it must be used sparingly, as having a natural tendency to aggravate the nervous erethism, and those symptoms of exhaustion with which the disease is so usually associated. In most cases, therefore, the local application of ice or cold douche to the head is a preferable and safer means of subduing the cerebral sensibility and increased vascular action, which are so characteristic of this peculiar disease. The cold douche may be repeated three or four times in the day; and frequent general cold affusion, where the temperature of the skin is not below the natural standard, the pulse is of moderate strength, and there are no local complications, is had recourse to in India with the best effect. In many cases, even where there were indications of a feeble circulation, but much cerebral excitement, I have seen the cold douche to the head used with most beneficial effects, while the rest of the patient's body was immersed in a warm bath. The water used in India, where the mean temperature is high, was never artificially cooled; but when used in European climates, particularly in winter, it may be prudent, occasionally, to take off the extreme chill of the water before using it. In further fulfilment of this indication, the administration of tartar emetic solution, in the proportion of half a grain of the tartrate of antimony, with a drachm of the tincture of opium, and an equal quantity of nitrous ether, may be had recourse to with the greatest advantage in allay-

ing the excitement of the brain, and in inducing a healthy secretory action of the skin and kidneys. When the biliary secretion is morbidly increased, emetics will be of the greatest use in relieving the stomach from the irritation of unhealthy bile; and should purgatives be thought more applicable, calomel in large doses, or combined with antimonials and opium, followed by castor oil, may be advantageously employed. Sometimes the exhibition of stimulating enemata after the calomel and opium may be preferred to purgatives, which, when used too freely, are apt to produce an increase of excitement.

The fulfilment of the second indication is to be accomplished by administering moderate quantities of thin sago or arrow-root, combined with wine or brandy, according to circumstances. From five or eight ounces of port wine in the course of twenty-four hours, with occasionally a quarter of a pint of brandy or gin, adapted to the greater or less nervous exhaustion of the patient, will be generally found sufficient to fulfil all that is here required in particular cases. Should the appetite, as is often the case, admit of more solid ingesta being used, mutton chop, grilled chicken, etc., may be given to the patient.

The third and last indication, that of removing poisoned elements from the blood, is partly effected by the latter part of the first indication of removing irritating secretions from organs that react on the brain. The special object in view, however, should be steadily promoted, by freely administering calomel, aided in its action by diuretics, in order to restore the impaired excretory functions of the liver and kidneys, and thus eliminate urea from the blood. In cases of peripheral erethism, arising from the retention of biliary matters, calomel will be found an invaluable remedy; and Mr. Corfe's late experience of its good effects, in cases of this kind, and of deranged gastro-hepatic function, establishes the fact, that it will succeed in subduing general erethism after all other remedies have failed. The whole of my experience in India can bear testimony to its good effects, and would justify Mr. Corfe's well-grounded reliance on this as a special remedy. More might be added as to the relative value of particular remedies; but enough has been already said practically to guide the judgment of all who may be called on to treat the disease.

[TABULAR STATEMENT.

TABULAR STATEMENT OF THE FORMS, CHARACTERISTICS, AND TREATMENT OF DELIRIUM TREMENS.

No. I. SIMPLE FORM.

Date	Name Age	No. of attack	Gen. Symptoms of Attack	Erethism (Charac. of)	Mental Alienation	Sensory and Motor Func.	Organic Functions	Treatment	Date of Amend.	Result
Feb. 24, 1835	W. J. 37	First	Severe pain in stomach after drinking; pain at base of skull; tremor of limbs	Peripheral and spinal	Fear of being murdered	Sensibility exalted (intermittent)	Tongue clean, great thirst, bowels loose, stools watery	General cold affusion, occasional purg. tinct. opii ʒiij in mist. camph. every 4 hours, increased on 5th day (being violent) to ℥ss every 3 hours, with good effect	—	Cured.
Feb. 15, 1836	H. C. 39	Not known	Excitement, tremor, restlessness, insomnia, pain in joints	Cerebral	Rapid incoherent muttering	Hyperæsthesia of cereb. & its connect. with spi. cord, mot. power of lingual n. ex.	Natural.	General cold affusion, laudanum ʒiss, morning and evening; sleep and coherency returned on fourth day	4th day	Cured.
May 31, 1836	D. B. 25	Not known	Vomiting, pain in stom., conv. starting of mus., frightful dreams	Cerebral	Psychical hallucination in dreams; supposed himself in prison	Convulsive twitching of muscles. No tremors	Tongue clean, stools nearly natural, pulse 74	Cold affusion, laudanum	—	Cured.
June 5, 1836	J. B. 35	Not known	Diarrhœa, epigastric pain and vomiting, broken slumbers, frightful dreams	Peripheral	Reverie; during sleep, dreams	Cerebral sens. exalted, motor funct. not affected	Tongue loaded, stools watery and yellow	General cold affusions, cal. and op. at bed-time, purgatives	—	Cured.
June 8, 1836	W. M'C. 36	First	Excitement, flushed countenance, eyes red and bloodshot	Cerebral	Spectral illusions; dreams	Motor function little disturbed, tong. tremulous	T. furred, yellow, thirst, p. 78, full, soft; sk. soft, very perspirable, appetite much impaired	General cold affusion, opium, occasional purgatives	4th day	Cured.

June 21, 1836	W. M. 29	First	Pain at vertex, tremor of tongue, wakefuln., pain in cardiac region	Cerebral	None	Motor funct. slightly affect.	P. 110, resp. nearly norm., t. load., yell.; bow. slightly derang.	Tart. emet. sol., purg. anod., doses of tinct. of op. and hyoscy. at bed time	4th day	Cured.
Aug. 23, 1836	Ditto	Second	Tremor, wakefulness, mental excitability, delirium 2d day of admis., languor	Cerebral	Not noted	Motor funct. more affected than before.	Bowels constipated	Cal. and op., with purg.; afterwards, tar. emet., laud., cold affus., brandy & water. Del. became intermit.	6th day	Cured.
Oct. 11, 1836	Ditto	Third	Anorx., watchfulness, trem. of t. & limb., no del., slight headache	Peripheral	None	Motor funct. slightly affected.	Pulse 90, weak; bowels constipated	Tart. emet., cold affusion, occasional purgatives, and anod. of op. and hyoscy.	6th day	Cured.
Aug. 22, 1836	E. S. 26	First	Spasmod. pain of stomach, vomiting & purging, restless. Delirious 3d day, after appl. of a blister	Peripheral	Incoherent loquacity, spectral illusions	Motor funct. little disturbed.	Pulse 88, full, compressible; sk. soft, perspirable; ton. slight. coat.; bowels at first loose, then cons.	Warm bath, cal. & op., blister to epigas. After delirium, general cold affusion, laudanum, and occasional purgatives	4th day	Cured.
Dec. 4, 1836	G. P. 30	First	Excitement, insomnia, contracted pupils, bloodshot eyes, tremor	Cerebral	Suspicious dread of conspiracy against him	Motor function little disturbed.	Resp. normal, sk. soft, moist; p. 100, rising as excite. increased to 130; b. loose	Emet. anod., warm bath; afterwards start. emet. sol. every third hour, small quantities of gin and water, cold douche to head	4th day	Cured.
Mar. 11, 1837	Mr. W, 33	First	Tremor, wakefulness, agitated manner, a wild suspici. express. of countenance	Cerebral	Quite coherent, but troubled by imaginary voices	Not much disturbed.	Resp. normal, skin soft, bowels confined, tongue loaded	Purgatives, drachm doses of tinct. op. every hour till sleep was induced, cold douche to the head	5th day	Cured.
Feb. 10, 1837	M. S. 34	Second	Lost power of perception and attention, insomnia, numbness of limbs, and trem. after drinking	Def. cerebral sensibility	Incoherent imbecility	Slight tremor	Pulse small & feeble, respirat. and skin natural, tongue loaded and red at the edges	Opium, with calomel and purgatives; warm bath	2nd day	Cured.

No. I. SIMPLE FORM (*continued*).

Date	Name Age	No. of Attack	Gen. Symptoms of Attack	Erethism (Charac.) of	Mental Alienation	Sensory and Motor Func.	Organic Functions	Treatment	Date of Amend.	Result
Feb. 6, 1838	T. K. 40	First	Insomnia, loquacity, busy agitated manner, tremor, ac comp. by cynanche tonsillaris after drinking	Cerebral	Spectral illusions; strange imagination that he had been burned to death on board ship	Tongue and hands very tremulous	Appetite good, bowels open, and tongue clean	Tartar emet. sol. with tinc. hyoscyam. every four hours, an opiate at bed-time, and one dose of castor oil	3rd day	Cured
Feb. 19, 1838	J. C. 45	Not known	Insomnia, restlessness, tremor and biliary purging after drinking; pain at nape of neck	Peripheral	Spectral illusions, suspicious dread of conspirators	Tongue tremulous, loaded	P. small, wiry; frequent sighing, copious cold perspiration, and increased biliary secretion, appetite good	Cal. and op. with purg., tart. emet. sol. with tinct. hyoscyam. Cold douche to head	2nd day	Cured
Mar. 19 1838	N. A. 38	Not known	Headache, tinnitus aurium, restlessness, red suffusion of eyes, suspicious look of dementia	Cerebral	Spectral illusions, suspicion of conspirators	Exalted sensibility, intermittent, slight tremor	Pulse and skin normal, tongue thickly loaded	Cal. & purgatives, tart. emet. sol. with anodynes	3rd day	Cured
Mar. 28, 1838	J. T. 49	Not known	Insomnia and tremor, nausea and irritability of stomach	Peripheral	Timid suspicion	Motor functions not much affected	Pulse, skin and respirat. normal, tongue clean, appetite good	Cal. and op., tart. emet. sol. and anod. Cold douche to head	3rd day	Cured
June 10, 1838	A. B. 36	First.	Insomnia, restlessness, spectral illus., trem. after drink.; nausea, irritab. of stom., pain of epigast.	Peripheral	Dreaming and spectral illusions	Convulsive twitching of muscles	Pulse and skin natural, tongue loaded	Emetic, purgatives, leeches to epigast., tart. emet. sol., with anod. and cold douche to the head	3rd day	Cured

June 19, 1838	J. A. 30	First	Insomnia, maniacal violence, incessant loquacity after drinking	Cerebral	Violent delirium, during fits of which, he wounded himself in several places	None.	Pulse full but soft, skin covered with perspiration	Tart. emet. sol., with anodynes every second hour; purgatives	2nd day	Cured
Feb. 10, 1837	M. S. 34	Second	Insomnia, lost power of perception and attention, numbness of limbs, tremor after drinking	Defective cerebral sensibility	Incoherent imbecility	Slight tremor	Pulse small & feeble, resp. and skin nat., tongue loaded in centre and red at margin	Cal. op. and purgatives; warm bath	2nd day	Cured
April 19, 1838	Ditto	Third	Childish imbecility, insomnia, and tremor after drinking	Ditto	Ditto	Ditto.	Ditto	Tart. emet. sol., with anod., diuretics and purgatives	6th day	Cured
April 24, 1838	J. H. 37	First	Insomnia, restlessness, perverted perception & slight nocturnal fever after drinking	Cerebral	Spectral illusion	None.	Resp. and skin normal, nausea, irritability of stomach, bowels loose	Tart. emet. sol., with anodynes, thrice daily; cold douche to the head	4th day	Cured
May 8, 1838	Ditto	Second	Insomnia, flushed countenance, throbbing in the head, frightful dreams, convulsive twitchings of muscles after drinking	Cerebral	Ditto	Convulsive twitchings	Skin bathed in perspiration, tongue foul, griping, and confined bowels	An emetic, purgatives and anodynes, tart. emet. sol. every 4 hours; cold douche to the head	9th day	Cured
Feb. 19, 1838	J. C. 45	Not known	Excitement, insomnia, restlessness, tremor, biliary purg. after drinking, pain at nape of neck	Peripheral	Spectral illusion, suspicion of conspiracy	Tongue tremulous	P. small & wiry, frequent sighing, appetite good, copious biliary secretion, tongue loaded	Cal. and op. with purgatives, tart. emet. sol. with hyoscyam.; cold douche to the head	2nd day	Cured

No. I. SIMPLE FORM (*continued*).

Date	Name Age	No. of Attack	Gen. Symptoms of Attack	Erethism (Charac. of)	Mental Alienation	Sensory and Motor Func.	Organic Functions	Treatment	Date of Amend.	Result
Mar. 19, 1838	N. A. 32	Not known	Heada., tinnit. aurium, susp. imbecile look, insomnia, rest., suffus. of eyes	Cerebral	Spectral illusion, and dread of a conspiracy	Slight tremor, sensibility alternately depressed and exalted	Pulse and skin natural, tongue thickly loaded	Calomel and purgatives, tart. emet. sol. with anodynes	3rd day	Cured
Mar. 28, 1838	J. T. 49	Not known	Nausea, irritability of stomach, insomnia, trem.	Peripheral	Mingled dread and suspicion	Motor function little affected	P., sk., resp. nat., tong. clean, appetite good	Cal. and op., tart. emet. sol. and anod. cold douche to head;	3rd day	Cured
May 26, 1838	J. C. 31	First	Insomnia, excit., slight headache, muscular starting, loquacity after drink.	Cerebral	None	Tremor and subsultus tendinum	Pulse and skin natural, tongue loaded, bowels confined	Tart. emet. sol. with anod. every 3 hours, purgatives, with croton oil; cold douche to the head	6th day	Cured
July 15, 1838	Ditto	Second	Insomnia, excitement, nausea, dilatation of pupils aft. drink.	Cerebral	None	None	Skin moist, tongue loaded, yell., bow. conf., urine scanty	An emetic, cal., James's powder and op., purgatives and warm bath	3rd day	Cured
June 4, 1838	J. S. 38	Second	Headache, insomnia, restlessness, and tremor after drinking	Peripheral	Frightful dreams and spectral illusions	Convulsive twitching of muscles	Pulse rapid, skin moist, nausea at stomach, tongue loaded	An emetic, with purg., tart. emet. sol. with anodynes; cold douche to the head	5th day	Cured
Nov. 2, 1838	H. H. 32	Not known	Insomnia, excit., flushed countenance, dilated pupils aft. drink.	Cerebral	Hallucination that he had been accused of murder	No tremor	P. freqt. and var., skin persp., tongue dark red, b. conf., ap. good	Cal. and purg. tart. emet. sol., with tinct. opii, cold douche to head	3rd day	Cured
Dec. 13, 1838	J. J. 38	First	Nausea, excit., flushed count., headache, insomnia, heat of skin after drink.	Cerebral	None, but manner suspicious	Slight tremor	Pulse soft, skin cool, bwls. open, tongue furred	Leeches to temples, cal. with tart. emet. and op. purg., cold douche to head, and anod.	3rd day	Cured

Dec. 13, 1838	R. M. 38	First	Insomnia, restless., loquacity and tremor after drink. Had inter. fever in July	Cerebral	Hallucination that he was pinioned	Tremor slight	Pulse 80, soft, skin cool, bowels confined, tongue clean	Cal. tart. emet. & op. purg., antimon. mix. with anod. every 3 hours, tepid douche to head, weak br. & w.	4th day	Cured
Dec. 18, 1838	J. J. 36	Not known	Insomnia, irritability of stom. and purg., tenderness of colon, and tremor after drinking	Peripheral	Muttering to himself, and catching at objects	Tremor	Pulse 60, soft, skin cool and moist, and covered with a thin yellow crust	100 leeches to abdom,. cal. & op., carb. ammo. gr. x, with camph. mix. & brandy 4 times daily, mod. allowance of port wine & enem.	3rd day	Cured
Feb. 8, 1840	A. C. 38	Not known	Nervous depress. aft. drink., succeeded by insomnia, restlessness, and unmanage. violence of manner, with illus., after drink	Cerebral	Reverie and illusions	Restless agitated manner	Pulse variable, skin soft, bowels slow	Tartar emetic solut., with anodns., a small allowance of brandy, cold douche to the head, a purgative and enemata	3rd day	Cured
April 5, 1840	W. E. 29	Not known	Nervous depress. aft. drink., followed by excitability and illusions	Cerebral	Reverie and illusions	No tremor	Pulse variable, skin warm and perspirable, tongue loaded	Cal. & op., cast. oil, tart. emet. sol., with anod., cold douche to head, small allow. of brandy diluted	3rd day	Cured
April 8, 1840	J. T. 26	Not known	Nerv. depres. after drink., and cessa. from hab. op.-eating, succ. by irrit. of stom., insom., restless., and illusions	Cerebral	Illusions of the usual character, red suffusion of the sclerotic coat of the eye	No tremor	Pulse feeble, skin cold and damp, tongue foul	A blister to the epigast., efferves. drts. with an oz. of brandy & a drm. of tinct. op. every 3 hours, cal. & op. with cast. oil, cold douche to the head	4th day	Cured
April 14, 1840	J. K. 24	Not known	Insomnia, restless., and delir. after drinking	Cerebral	Busy delirium	Much tremor	Pulse feeble, skin covered with clammy perspiration	Purg., tart. em. sol., with tinct. op. & diur., br. & water in mod. quant., cold douche to head, & sul. quin. sol.	9th day	Cured

No. I. SIMPLE FORM *(continued)*.

Date	Name Age	No. of Attack	Gen. Symptoms of Attack	Erethism (Charac. of)	Mental Alienation	Sensory and Motor Func.	Organic Functions	Treatment	Date of Amend.	Result
April 22, 1840	C. F. 31	Second	Insomnia, restlessness, and delirium after drinking	Cerebral	Busy delirium	Much tremor	Pulse feeble, skin cover. with clammy perspiration	Purg., tar. em. sol., with tinc. op. & diur., brandy & w. in mod. quant., c. douche to head, sulph. quin. sol.	9th day	Cured
May 14, 1840	T. R. 42	Not known	Incoherent loquacity, tremor, insomnia, and epigastric tenderness after drinking	Peripheral	Incoherent loquacity	Much tremor	Pulse small and feeble, stomach irritable, bowels loose, tongue coated yellow	Leeches & blist. to epigast., cal. and op. with purg., effervesc. draughts with tinct. op. and diuret., cold douche to the head	6th day	Cured
May 31, 1840	W. C. 33	Not known	Insomnia, excited agitated manner, tremor, illusions after drinking, epigas. pain, red suffus. of the eyes	Cerebral and peripheral	Illusions of the usual character	Much tremor	Pulse soft and frequent, skin moist and cool, tongue white, anorexia	Cal. camph. & op., with purg., blister to nape of neck, leeches to epigast., w. bath & c. douche to head, tar. eme. sol., with tin. op. diuret., sul. quin. sol.	4th day	Cured
July 20, 1840	T. E. 29	Not known	Insom., impatient agitat. manner, illus., trem., epi. pain, dilated pupils aft. drink.	Cerebral	Illusions of the usual character	Tremor not great	Pulse small and feeble, skin covered with perspiration, bowels confined	Cal., James's pow., op. & purg., w. bath and c. douche to head, tart. emet. solu. with tinct. op., brandy & w.	4th day	Cured
Aug. 6, 1840	C. M. 47	Not known	Incohe. mutt., fidgetty employ. of hands, as if drawing threads from ends of fing. trem., inso., abd. tend. aft. drink.	Cerebral and peripheral	Illusions and mental incoherence of an intermittent character	Tremor	Pulse of variable frequency and strength, skin moist, bow. loose, and vomiting of dark bilious matter	Leeches to epigast. and a blister to the nape of neck, calom., hydrochlor. of morphia, with purgatives, cold douche to the head, port wine	—	—

No. II. INFLAMMATORY FORM.

Date	Name Age	No. of Attack	Gen. Symptoms of Attack	Erethism (Charac. of)	Mental Alienation	Sensory and Motor Func.	Organic Functions	Treatment	Date of Amend.	Result
Dec. 14, 1828	T. F. 44	First	Hepatic tenderness, wakefulness, delirium, tremor	Peripheral, ending in encephalitis tremulenta	Thought he had seen the V. Mary, loquacious, restless, impatient	Tightness of head, transient tremor	Tongue dry and parched, slight diarrhœa, biliary secretion dark green	Leeches and blister to side, cal. as purg., bleeding for injury of head, cold lot. to head; camph. and op., mer., leeches and blister to head for hepat. tend. and tightness in head		Cured
April 18, 1836	E. D. 33	Not known	Wound of elbow joint, violence, incoherence, screams	Cerebral, traumatic delirium	Maniacal violence, muttering	Tremor, convulsive twitching of muscles, contraction of pupils	Tongue dark red, much thirst, urin. sec. affec., p. 100, of mod. strength; persp. copious, clammy; resp. diffi. on 18th day when mind was collected, cough, purulent expectoration, scrofulous constitution	General cold affusion, leeches to temples, blister between scap., tinct. muriat. morph., purgatives		Died 18th May. Tubercles in lungs.
Aug. 12, 1836	W. K.		Diarrhœa, shivering tremor, fluttering feeble pulse. On fourth day, delir., pain in right breast on inspiration, uneas. in spine	Cerebral and spinal	Incoherent loquacity, fancied his bed was being pulled from under him	Intermittent exalt. sens., motor funct. not much affected, pupils contracted	Pul. 120 after delir., frequent sighing, occas. dry skin, respir. oppressed on admission, bowels conf., epigast. tender, urine in mod. quantity	Warm bath, cal. op. and ipecac. at admission; after delirium, cupping to spine and epigast., tart. emet., tepid affusion and laudanum at bed-time	2nd day	Cured

No. II. INFLAMMATORY FORM *(continued)*.

Date	Name Age	No. of Attack	Gen. Symptoms of Attack	Erethism (Charac. of)	Mental Alienation	Sensory and Motor Func.	Organic Functions	Treatment	Date of Amend.	Result
Feb. 2, 1838	S. B. 44	Not known	Insomnia, impatient violence and tremor after nausea, hiccup, vomiting & feeling of nervous depression	Peripheral and cerebral	No delirium, but restless impatience	Tongue tremulous	Pulse full and strong, skin covered with moisture, bowels constipated, inspiration painful.	An emet. at admis. with purgat. of cal. castor and croton oil, cold douche to head, leeches to left chest, tart. emet. sol. and tinct. morph. Collapse on third night, death soon after		Died. Effusion of blood on dura mater, venous congestion of cerebral membr., serous effusion into subst. of brain, pulm. apop. left lung, lymph effused between pleuræ on both sides
Oct. 13, 1836	W. M'C. 36	Second	Acute epigast. pain & tend. increased by deep inspiration, occas. cough and viscid mucous expector. dulness at fifth rib in right pect. region, absence of respiratory murmur, slight dilatation of ribs, puerile inspiration in left lung, wakefulness, then delirium, collapsed features	Peripheral	Muttering delirium	Motor functions little disturbed	Pulse 120, soft, respiration quick and painful, skin soft, perspirable; tongue coated, yellow; abdomen distended with flatulence, bow. loose, stools dark green, biliomucous	Leeches to epigastrium, cold douche to head, tartar emetic, calomel and opiates		Died on 4th day. Pleur. pulmon. vascular over mid. lobe of right lung, which was hepatized; fibrinous coag. in all cavities of heart, muc. coat of stom. uniformly diffused redness, liver vertically enlarged, 9lb. 12oz.

Oct. 23, 1838	G. O. 20	First	Insom., severe front. headache, dilatation of pupils and intolerance of light, epigastric pain, and numbness of limbs after drinking	Cerebral and peripheral	Incoherent wandering of thoughts	No tremor	Skin alternately cool, moist, and dry, warm; pulse 104, sharp, tongue furred and red at edges, urine scanty and hot, slight cough, painful inspirat.	Leeches & blist. to epigast., 1 gen. bleed. to 20 oz., w. bath & c. douche to head, blist. to nape of neck, merc. to consti. effect, tart. emet. & op., afterw. comb. with sul., quin. and aloes, diuretics	11th day	Cured
May 28, 1840	P. C. 25	Not known	Insomnia, incoherent loquacity, vertigo, pain at the vertex of head, abdominal tenderness after drinking, pupils dilated	Cerebral and peripheral	Incoherent loquacity, with hallucination of being on board ship	No tremor	Pulse small and feeble, skin cool, tongue furred and red at the edges, anorexia	Leeches to epigast. and right side, merc. to its constitu. effect, purg., warm bath and cold douche to head, camph. mixture with tinct. op. and diuret., sago and wine	7th day	Cured
					No. III. PYREXIAL FORMS.					
Dec. 26, 1823	A. D. 34	First	Inflam. of foot, delir. on 29th, insomnia, anxiety, restlessness	Peripheral	Thought himself about ord. duties, mutt., del. hurry, anx	Tremor of hands slight	Pulse full, skin hot, bowels conf. motions dark yellow	Venesect. to ℥xvj, leeches to head, camphor and opium	—	Cured
Nov. 19, 1836	J. C. —	Not known	Insomnia, flushed counten., agitated manner, & trem. aft. drink.	Cerebral	Intermittent reverie, fear of conspirators	Musc. of arms tremulous	Respiration natural, bowels constipated	Tar. eme. sol. twice daily, with cold affu., anod. at bed-t., purg., latterly sul. quin. sol.	7th day	Cured
July 31, 1837	J. P. 33	First	Vertigo, languor, nau., vom., cold skin, violent del., flush. coun., trem., freq. firm p. 3d day aft. ad. Prev. in hosp. for remit. fev. accom. with tremor	Cerebral	Spectral illusions, violent delirium, dread of conspirators	Motor functions not much affected	Pulse rapid, feeble, respirat. natural, skin at first cold, afterwards warm and bathed in persp., ton. thickly fur., urgent thirst, defect. appetite	Purgat. at admission, blister to nape of neck, cold douche to head, pills of calom., tart. emet. and op. after delirium	5th day	Cured

No. III. PYREXIAL FORM *(continued)*.

Date	Name Age	No. of Attack	Gen. Symptoms of Attack	Erethism (Charac. of)	Mental Alienation	Sensory and Motor Func.	Organic Functions	Treatment	Date of Amend.	Result
Jan. 9, 1838	S. H. 41	First	Insomnia, flushed countenance, excitement, and tremor	Cerebral	Thought distressed and anxious, accompanied by muttering, continued dread of conspirators	Motor funct. not much affected	Pulse frequent, wiry, skin moist, respirat. normal, bowels confined	An emet. at adm., tart. emet. sol. and anod.; after inc. symp. on 3rd day, cal. tart. emet. and op., cold douche to head, and allow. of bitter beer	4th day	Cured
April 6, 1838	T. W. 39	Not known	Insomnia, restlessness, & trem. after drinking; much frontal headache and pain at base of occiput	Cerebral	Spectral illusions, dread of conspiracy, frightful dreams	Starting of muscles	Cough with febrile parox., tongue furred, bowels confined, urin. sec. scanty	Cold douche to head and warm bath, purg. and colchi. with other diuretics and anod., repeated leeching and cupping at base of occiput	35th day	Cured
July 13, 1838	A. O. 47	Not known	Headache, insomnia, spectral illusion & tremor, with febrile paroxysm	Cerebral	Muttering, delir., spectral illusions, kicking at bedclothes	Subsultus tendinum	Pulse variable, from 96 to 120, skin alternately hot and perspir., tongue clean, tremulous, urin. scanty	Camphor mixture, antim. wine, diuretics, cold douche to head, leeches to temples, blister to nape of neck. Died comatose after 3 drachms tinct. opii, given to produce sleep		Death 3rd day. Venous congest. of pia mater, much serous effusion between it and tunica arachnoidea and into the ventricles, vascular redness of mucous coat of stomach, and intestinal canal, substance of kidney converted into uniform fleshy mass.

Aug. 12, 1838	A. W. 38	First	Pain in temples and base of occiput, extending down the neck, insomnia, flushed countenance, indistinct pyrex. parox., of a rheumatic diathesis and intemperate	Cerebro-spinal	Muttering, delirium	Mot. funct. not noted	Pulse frequent, feeble, skin cold and covered with perspirat., ton. slightly furred and red at edges	Blister to head and nape of neck, camph. mixture, with antim. wine and colchicum, other diuretics, latterly cal., with aloes and small doses of sulphat. quinine	—	Death 3rd day. Vasc. red. of cereb. membr. and subst. of brain, milky opacity of arachnoid, thickening of pia mater, which, at the optic thalami, chiasma of optic nerves, crura-cerebri, pons Varolii, & med. oblon., was adhe. by a thick lay. of lym.; serous effu. into theca vertebr., cont. flakes of lym.
Mar. 14, 1839	F. H. 29	Not known	Insomnia, restlessness, illusions and tremor, with irritability of the stomach after drinking	Cerebral and peripheral	Illusions and mental incoherence of an intermittent character	Tremors	P. variable in freq. & stren., sk. gen. moist, sometimes dry, bow. conf., attend. by abd. tend. & anor. tongue coated	Leeches & blist. to abdomen, cal. and op. with purgat., w. bath & c. douche to head, tart. emet. sol., tinct. op., sulph. quin. mixt., sago and wine	16th day	Bright's dis. of kid. Cured
					No. IV. EPILEPTIC FORM.					
April 4, 1838	J. B. E. 46	Not known	Insom., restles. flushed counte., bloodshot eyes, dilat. pupils, pain at base of occip., irritabil. of stom. aft. drink. Two epilep. fits day of admiss., another the 3rd day	Cerebral and spinal	Impatient but manageable delirium, muttering and kicking at the bedclothes	Vertigo and convulsive twitching of muscles	Skin warm and dry, resp. not much affected, tongue loaded, bowels constip.	Leeches to temples, blister to nape of neck, cold douche to head, calomel, with tartar emetic, opium and purgat. Death on tenth day by an epileptic fit		Death. Red vascul. and thickening of pia mater, opacity of tunica arach. and much serous effu. into sub. of brain, old adhes. of left lung, fatty degen. of r. side of heart & soften. of l., fibr. polypi in lft. ventric., thick. of aorta, enlar. of liv. & red vasc. of muc. mem. of stom.

No. IV. EPILEPTIC FORM *(continued)*.

Date	Name Age	No. of Attack	Gen. Symptoms of Attack	Erethism (Charac. of)	Mental Alienation	Sensory and Motor Func.	Organic Functions	Treatment	Date of Amend.	Result
June 28, 1838	W. K. 38	Fourth	Insomnia, restlessness, and mental hallucination for several days before admission, caused by hard drinking, for which he had taken an emetic, and been bled and leeched	Cerebral	Mental hallucination of the usual character	Not noted	Not noted	Tartar emetic sol., with tinct. hyoscyam. every second hour. Became very restless and incoherent on second night after admission, and died suddenly in a fit		Died 2nd night. Vascul. redness of, cerebral membra., much serous effus. into the ventricles & at base of brain; heart enlarged and soften., semi-lunar valves of aorta ossified; posterior portion of lungs gorged with blood; muc. coat of stom. pale and softened.
April 28, 1839	W. M'D. 35	Fourth	Restlessness, flushing of countenance, bloodshot eyes and tremor after drinking. Pain at nape of neck	Cerebral	None	Tongue and limbs tremulous	Tongue loaded, thirst great, stools dark bilious	Cal., James's powder and purgatives at admission, leeches to nape of neck	3rd day	Cured
May 12, 1840	J. N. 36	Not known	Insomnia, pallor of countenance, and extreme tremor, after drinking	Cerebral	Illusions of usual character	Excessive tremor of tongue and limbs, convuls. fits. of epilep. char., after one of which he became quite rational	Pulse frequent, feeble, skin cold and moist, tongue loaded	Cal. and opium followed by castor oil at adm., small quant. of tart. emet. sol., with tinct. hyoscy., brandy punch, cold douche to head and sinapisms to feet. Died in an epileptic fit on 2nd day		Death. Permission to examine the body not obtained

May 18, 1840	C. W. 38	Not known	Severe frontal headache, accompanied by heat and dryness of skin, uneasiness in loins, and much tremor after drinking	Cerebral	None	Extreme tremor	Pulse small and feeble, skin dry, tongue coated white, bowels confined, urine scanty, hot	Cal. with ipec. and hydrochlor. morph., castor oil, warm bath, effervesc. draughts, with diur., cupping and leeching of temples, blister to nape of neck, cold douche to head. Death by epileptic fit on second day		Death. Fatty lesion of cortical subst. of both kidneys, extend. into tubular portion between the calices; liver much enlarg., muc. coat of stom. of grey leaden col., lungs emphysem. and congested as in asphyxia, mod. congest. of cerebral vess., serous effus. between arachnoid and pia mater.
June 5, 1840	W. A. 37	Not known	Epigastric pain and vomiting, followed by insomnia, pallor of counten., dilated pupils, illusions, general excitement, and tremr. after drinking	Cerebral and peripheral	Illusions of usual character	Much tremor of hands, and occas. cramp	Pulse feeble, skin covered with perspiratn.	Blister to epigast., cal., ipecac. and hydrochlor. morph., castor oil, small quant. of brandy and water, with tinct. opii, local abstraction of blood from nape of neck by cupping, cold douche to head and hot foot-bath. Died on third day		Death by epilep. Arboresc. vascularity of cereb. mem. more than normal proport. of bloody points on incised sub. of brain, which was softened, much serous effusion into ventricles, liver much enlarged, lungs distended as in asphyxia.
April 7, 1840	J. D. 36	Not known	Insomnia, excitement, trem., illusions & much irritability of stomach after drinking	Cerebral	Illusions of usual charac., temp. insens. of pupils of eye, following convulsions, count. flushed	Extreme tremor, and impaired muscular power of the right side	Pulse feeble, skin moist, tongue clean, bowels open	Emet. of sulph. zinc, blisters to epigast. & nape of neck, efferves. drats. with br. & nit. ether, afterw. antim. mix., with tinct. op. & cold douche to head	3rd day	Cured

27, Hyde Park Square, London, March 1850